**Detailed List of Skills for the Unit 2, Part 2 Notes – Properties of Water**

AP Biology

For this notes packet, you should be able to…

1. Explain why water is a polar molecule.

**Location within the Notes:** A. #2-3

**Questions on Assignments that Relate to this Skill:** #6 in the Notes Questions

1. Describe the difference between hydrophilic and hydrophobic substances and be able to provide examples of each.

**Location within the Notes:** A. #4-5

**Questions on Assignments that Relate to this Skill:** #4 in the Notes Questions

1. Explain how water’s polarity allows it to form hydrogen bonds with other water molecules and other polar substances containing hydrogen, nitrogen, oxygen, or fluorine.

**Location within the Notes:** B. #1-3

**Questions on Assignments that Relate to this Skill:** #6 in the Notes Questions

1. Explain how water’s polarity allows it to act as a universal solvent and be able to diagram an example of water dissolving a substance like NaCl. Also, be able to identify the charge of a solute based on which end of the water molecule (i.e. the positive hydrogen end or the negative oxygen end) is attracted to that solute.

**Location within the Notes:** B. #5-6

**Questions on Assignments that Relate to this Skill:** #7 in the Notes Questions, #9 in the Review Packet (Must Knows)

1. Explain how water’s polarity and its ability to form hydrogen bonds contribute to cohesion. Explain how cohesion contributes to surface tension, and explain how surface tension on the surface of a pond allows a water strider insect to “walk on water.”

**Location within the Notes:** C. #1

**Questions on Assignments that Relate to this Skill:** #2 in the Notes Questions, #12 in the Review Packet (Must Knows)

1. Explain how cohesion and adhesion contribute to capillary action.

**Location within the Notes:** C. #2-3

**Questions on Assignments that Relate to this Skill:** #5 in the Notes Questions

1. Explain how hydrogen bonding between water molecules allows ice to float on liquid water.

**Location within the Notes:** C. #4

**Questions on Assignments that Relate to this Skill:** #3 in the Notes Questions, #10 in the Review Packet (Must Knows)

1. Explain how water’s ability to form hydrogen bonds contributes to its high specific heat/heat capacity and high heat of vaporization. Explain how water’s high specific heat/heat capacity allows areas near bodies of water to be cooler in the summer and warmer in the winter. Explain how water’s high heat of vaporization enables evaporative cooling (through sweating in some animals and transpiration in plants).

**Location within the Notes:** C. #5-6

**Questions on Assignments that Relate to this Skill**: #7 and #8 in the Review Packet (Must Knows),

1. Explain how water’s ability to form hydrogen bonds results in no temperature change as water converts from a solid to a liquid and from a liquid to a gas.

**Location within the Notes:** Not explained fully in the notes, but we can go over this during class

**Questions on Assignments that Relate to this Skill**: #1 in the Notes Questions

1. Describe what the pH scale measures, and identify differences between acids and bases.

**Location within the Notes:** D. #1-3

**Questions on Assignments that Relate to this Skill**:

1. Use the two pH equations from your notes packet.

**Location within the Notes:** Below D. #3

**Questions on Assignments that Relate to this Skill**: #8 in the Notes Questions

1. Define a buffer, and be able to predict how the carbonic acid-bicarbonate buffer system in the blood will act should there be a change in blood pH. To do this, you must know the names and chemical formulas for carbonic acid and bicarbonate.

**Location within the Notes:** E. #1-6

**Questions on Assignments that Relate to this Skill**: #11 in the Review Packet (Must Knows)